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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,053	04/27/2006	Toshiaki Anzaki	44046.203.299.10	9662

22859 7590 07/22/2008
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EXAMINER

ROBINSON, LAUREN E

ART UNIT	PAPER NUMBER
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1794

MAIL DATE	DELIVERY MODE
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07/22/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/560,053	Applicant(s) ANZAKI ET AL.	
	Examiner LAUREN ROBINSON	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/17/2006, 6/30/2006</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-2, 4, 6, 8-9, 12-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Finley (WO 2002/040417) as evidenced by Lumpkin (“Physical and Chemical...”), Gosain et al. (US Pub. 2002/0004289) and “The Mineral Anatase” published March 3, 2000.

Finley teaches a photo catalytic member (title, Figure 1) comprising a substrate, an undercoat layer formed on the surface of the substrate and a photo catalyst layer formed on the surface of the undercoat layer (Pg. 2, par. 6-7, Pg. 3, par. 5 and Pg. 4, par. 1-2). The reference teaches that the main component of the undercoat layer is a zirconium oxide (Pg. 4, par. 1) which is the main component in the layer (Pg. 6, par. 6) and that the zirconium oxide can be in the crystalline form (Pg. 8, par. 4). Also, Finley teaches that the photo catalyst layer is in the crystalline phase (Pg. 2, par. 6-7, Pg. 8, par. 4). Further, Finley teaches that the substrate can be that of polyethylene terephthalate (PET), glass, metal or a combination thereof (Pg. 3, par. 2) and this substrate is evidenced by Gosain et al. to be low heat resistant which has a heat resistance of about 100 degrees Celsius (Gosain, 0013) (**Claims 1**).

Also, the reference teaches that zirconia can occur in the baddeleyite structure (Pg. 8, par. 4) and as evidenced by the title and abstract of Lumpkin, baddeleyite zirconia corresponds to monoclinic zirconia (**Claim 2**). Further, the examiner notes that polyethylene terephthalate is known in the art to be a resinous material (**Claim 4**) and the reference teaches that the substrate in which the above undercoat and photo catalyst layer are applied to can be a mixture of the above resin and an inorganic material (Pg. 3, par. 2). Therefore, the substrate will be an organic-inorganic composite substrate (**Claim 6**).

Further, the reference teaches that the substrate can include a functional coating on the substrate which can be that of an infrared radiation reflecting silver layer (Pg. 5, par. 5-7). Since the applicants disclose in paragraphs 0008, 0012 and 0048 that a “non-heat resistant thin film” corresponds to a film with high heat reflectance and low heat resistance such as silver, the examiner notes that the above teaching corresponds to claims 8 and 9(**Claims 8-9**).

Finley also teaches that the photo catalytic layer has a main component of Since it was evidenced above that the polyethylene terephthalate component within the substrate has a heat resistance of 110 degrees Celsius then this corresponds to applicants’ claims 12-13 (**Claims 12-13**). Also, the main component in the photo catalyst layer is a titanium compound (Pg. 2, par. 6) (**Claim 14**) which can be in the form of anatase type titanium oxide (Pg. 2, par. 6) and the examiner notes as evidenced by “The Mineral Anatase”, anatase titania is a tetragonal titania (**Claims 15-16**).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 3, 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Finley (WO 2002/040417) as applied to claim 1 above.

As discussed, Finley as modified discloses the invention of 1. However, Finley is still *silent regarding the substrate being comprised of low heat resistant glass or a low resistant metal, and the above discussed resin substrate being a resin film.*

Consider claims 3 and 7: As the applicants' disclosed in their specification that a substrate with "low heat resistance" is a substrate with a heat resistance of less than 700 degrees Celsius and more preferably less than 500 (Applicants' publication, 0011), the examiner notes that Finley does not specifically disclose a substrate with a metal nor a glass having the above resistant temperature. However, the reference does teach that the type of substrate is not limiting and it may be any desired material having any desired characteristics and any form can be used (Pg. 3, par. 2). Also, the examiner notes that on page 6, paragraph 6 of the reference, heating can be performed at temperatures that are below the above applicants described "low heat resistant temperatures".

While the reference does not disclose that the metal or glass substrates having a specific heat resistance at the heated temperatures, one of ordinary skill would recognize that it would be advantageous for a substrate to have heat resistance at

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predetermined heating temperatures above the temperatures used in production due to it being known that if a substrate is heated at a temperature greater than its softening point, etc., then the strength of the substrate will be deteriorated due to effects such as melting, cracking, etc. Therefore, it is the examiner's position that one of ordinary skill in the art would recognize that since the heating temperatures in the reference are between 100 to 650 degrees Celsius as described on page 6, paragraph 6, then it would be advantageous to use a substrate having a heat resistant temperature of above 100 or even above 650 degrees Celsius, depending on the heating temperature within the above range, as it would maintain strength, etc. of the substrate during production and the substrate having a heat resistant temperature of above 100 or even slightly above 650 would still correspond to applicants' "low heat resistant" characteristic.

As such, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Finley to include that the substrates, whether glass, metal, etc. can be chosen from materials that have a heat resistance within the heating ranges during the production such as and temperatures above 100 or even above 650 degrees Celsius in order to increase strength and produce a structure in which resistance to cracking, etc. is increased (**Claims 3 and 7**).

Consider claim 5: Although Finley does not specifically disclose that the resin substrate above can be a film substrate, the examiner notes that the reference as discussed teaches that the substrate is not limited and that any form can be used. For example, the reference teaches that substrates can be items such as windows for air, land, etc. vehicles (Pg. 2, par. 8). The examiner notes that it is known in the art that

some land vehicles such as jeeps and/or convertibles have thin film resin type sheets for windows and since Finley teaches that a resin substrate can take on any form and that the substrates can be used in any type of land vehicle window materials, then the examiner believes that one of ordinary skill would recognize and find obvious that if a resin film window for the above vehicles was desired to be produced with the photocatalytic function, then they could use the resin substrate of Finley in a film form. As such, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Finley to include that the substrates can be in any form, including the resin substrate being in a resin film form, in order to produce windows for land vehicles such as the ones above with the taught photocatalytic property **(Claim 5)**.

3. Claims 10-18 are rejected under 35 U.S.C. 103(a) as being obvious over Finley (WO 2002/040417) as applied to claims 1-9 above in view of Nakai et al. (JP 08/104547).

Consider claims 10-11: As discussed, Finley as modified teaches all the limitations of claims 1-9. However, the reference is *silent regarding the limitation of the IR reflecting film (non-heat-resistant) being a laminate with the structures as claimed in claims 10 and 11.*

While a direct human translation is forthcoming, using the English machine translation, Nakai et al. teach a glass member in which an infrared (heat) reflecting layer is laminated on one surface of a glass substrate (0001, 0020, Figures). Nakai et al. also teach that the infrared reflecting layer, which the applicants regard as their “non-heat-resistant”, can be comprised of a multilayer laminate comprising the following layered

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structure layered in the following order: dielectric (metal oxide)/ Ag/ dielectric (metal oxide)/ Ag/ dielectric (metal oxide) (Nakai, 0020 and Figure 1) in order to increase IR reflectance and maintain visible transmission (0004). However, they also teach that a three layer laminate has been formed with the structure of dielectric/Ag/dielectric as it too provided for increased IR reflectance and transmission of 70% or greater (0002). Also, they teach that the above laminate is formed on the substrate by vapor deposition such as sputtering methods (0013 and 0021).

Finley and Nakai et al. disclose analogous inventions related to glass substrates with an infrared reflecting film applied thereon comprised of silver. Also, Finley discloses the need for visible transparency in the article (Pg. 3, par. 2). As such, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Finley to include the laminate structures and the method of application of Nakai et al. in place of the single silver layer in order to enhance IR reflectance will maintaining visible transmission (**Claims 10 and 11**).

Consider claims 17-18: The examiner notes that claims 17 and 18 are a product by process claims and while the process is limiting, the patentability of the claim depends on the product itself and not on its method of production. Therefore, if a product is found in the prior art that is the same or similar to the product of the applicants' invention, the claims are unpatentable even if the prior art product was made by a different method.

In the instant case, Finley as modified teaches the non-heat-resistant thin film formed by the method as taught in Nakai et al. in order to enhance IR reflectance which as discussed above, Nakai et al. forms the layers by a vapor phase sputtering method.

Also, Finley teaches that the undercoat and the photocatalytic layer are also formed by vapor phase deposition such as sputtering (Pg. 6, par. 1-7) (**Claims 17-18**).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAUREN ROBINSON whose telephone number is (571)270-3474. The examiner can normally be reached on Monday to Thursday 6am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on 571-2721284. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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